NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
State of New Hampshire, Department of Cultural Resources 603-271-3483
19 Pillsbury Street, 2nd floor, Concord NH 03301-3570 603-271-3558
Voice/ TDD ACCESS: RELAY NH 1-800-735-2964 FAX 603-271-3433
http://www.nh.gov/nhdhr *preservation@nhdhr.state.nh.us*

REPORT ON THE TRUSTEES' BUILDING CANTERBURY SHAKER VILLAGE CANTERBURY, NEW HAMPSHIRE

JAMES L. GARVIN
18 NOVEMBER 2001

Summary:

The Trustees' Building or office of the Church Family at Canterbury Shaker Village was the chief point of contact and commerce between the Church Family and the World. The building was the first and only brick structure built by the Church Family, and was constructed of materials of exceptional quality and workmanship. Built with fine bricks that were manufactured by the Shakers, the Trustees' Building reveals much about the Shakers' skill as brickmakers and as masons. The Trustees' Building is a structure of statewide significance in the history of masonry construction in New Hampshire.

Although built between 1830 and 1832, when the federal style was quickly waning and giving way to the Greek Revival in neighboring communities, the Trustees' Building is stylistically conservative. Its interior detailing reflects the federal style, as modified and refined by the Shakers, more fully than any other structure at the village and perhaps more fully than any other Shaker building in New Hampshire. The structure therefore possesses stylistic significance as a document of the Shakers' adoption and modification of an architectural style that was prevalent in the World.

The building's significance in technology, workmanship, and style would make the structure individually eligible for the National Register of Historic Places if it were evaluated alone. The Trustees' Building is presently listed in the National Register as a contributing structure within the Canterbury Shaker Village National Register Historic District (listed 1975). It is also a contributing structure within the Canterbury Shaker Village National Historic Landmark Historic District (listed 1993).

The Trustees' Building remains in generally good condition, but has suffered some structural damage, principally from the shifting and settling of its foundations. The structure also retains a range of older technologies, some of them in full use today, which do not meet current standards of workmanship or safety. Because the building is partially occupied as a residential structure, these systems could jeopardize the safety of the structure and its occupants.

History:

Construction of the Trustees' Building was begun in 1830 with the excavation of the cellar. The building was the third office built by the Church Family, the two earlier offices having been smaller wood-framed structures. The Trustees' Building stands on a site that slopes rather steeply to the south and to the west (behind the building), providing for a two-story basement at the southern end of the building. Physical evidence within the structure shows that the sub-basement, which lies beneath the southern end of the structure only, provided for wood, ash, and water storage for a kitchen that was located on the main basement floor above. The sub-basement contains a brick water cistern at its extreme southern end. Adjacent to the cistern rises a large, arched brick chimney base with an ash chute and vault. A room in the southwestern corner of the sub-basement probably served as a larder or pantry for the kitchen above.

The basement walls measure 42 feet by 72 feet, encompassing an area that is two to three times that of the average brick house of the period. Construction of the extensive double-depth cellar beneath the Trustees' Building was in itself a major undertaking. Building the walls involved removal by hand of many cubic yards of earth and stone, shoring the exposed earthen walls of the excavation, laying the footings, and placing the many courses of large granite blocks. The complexity of building so massive a structure with largely unfamiliar materials is documented by the fact that in the early summer of 1830 builder Elijah Brown and tinsmith Thomas Hoit were sent to the Shaker villages at New Lebanon and Hancock to learn "how to build with stone and brick and tin the ruff" of the proposed edifice.[1]

The basement walls are constructed of uniform courses of split granite, hammered to a true face where exposed to view on the "public" sides of the building. The stone walls extend up to and somewhat above grade level on the front (east) of the building, adjacent to the nearby road. Being almost entirely below grade, the front walls act as retaining walls, resisting the pressure of the earth outside. Behind the building, the walls rise to a height of ten courses above grade and are topped by a granite water table of somewhat lesser depth, which encircles the building and supports the brick walls above. Like other examples of granite splitting and shaping found throughout the village, these walls testify to the Shakers' skill in locating excellent stone and in shaping this intractable material to

[1] Scott T. Swank, *Shaker Life, Art, and Architecture: Hands to Work, Hearts to God*. New York: Abbeville Press, 1999, p. 30.

their needs.[2] The stone walls of the building are discussed further under "Significance," below.

According to a building journal for the Church Family compiled by Brother Irving Greenwood sometime after 1930, work on the superstructure started in April, 1831, and the exterior of the building was completed in November.[3] It is recorded that the Shaker community employed between ten and fourteen non-Shaker day laborers in completing the structure.[4] Since the Church Family had never before erected a brick building, these men may have included some experienced bricklayers from nearby towns, who would have been familiar with the special skills needed to construct a large brick edifice.

The exterior walls were built of pressed bricks. These uniformly-molded and well-fired bricks were made at the Shakers' Lake Meadow brickyard, which the community had established in 1824. According to an entry for that year in Francis Winkley's daybook, the Shakers had "built a dam to flow the Lake meddow and we have made a Brick yard in said meddow and halled a building there for its convenience and dug clay and done a great deal more work on and about said meddow." [5]

The Lake Meadow brickyard was undoubtedly established mostly to supply chimney bricks for the Shakers' framed buildings. It is clear from the evidence of the Trustees' Building itself, however, that the community had become proficient in the manufacture of brick and square hearth tiles (which are essentially double-width bricks) in the seven years during which they had operated their brickyard. By 1831, in fact, the Shakers may have been producing the finest bricks being made in the upper Merrimack River valley. The brick walls of the building are discussed further under "Significance," below.

The window openings of the Trustees' Building have lintels and sills of carefully hammered granite. The use of granite lintels and lug sills, instead of iron lintels and wooden slip sills, had become prevalent among bricklayers in neighboring communities by about 1830. The Shakers' skill in splitting and hammering granite permitted them to obtain stone building elements that were equal in quality and finish to those being produced in the quarrying center of Concord at the same period.

Early photographs attest to the fact that the Trustees' Building was originally fitted with twelve-over-twelve and twelve-over-eight-light window sashes on the first and second main stories respectively. These were replaced by the current two-over-one sashes in 1904. Early pictures indicate that the original sashes were double hung, with both upper and lower sashes being counterweighted and movable to provide the most flexible possible ventilation. Though occasionally used in the finer houses of neighboring towns in the early 1830s, movable upper sashes were rare at that period. Their use in the

---

[2] For a brief reference to the locations of some of the Shakers' granite quarries, see David R. Starbuck, "Documenting the Canterbury Shakers," *Historical New Hampshire* 43 (Spring 1988), p. 18.
[3] Irving Greenwood, "Church Family Building Journal," Canterbury Shaker Village Archives, p. 90.
[4] Swank, *Shaker Life, Art, and Architecture*, p. 30.
[5] Francis Winkley Daybook, Manuscript #25 (Canterbury Shaker Village Archives), entry for December 11, 1824, p. 68, quoted in Scott T. Swank and Sheryl N. Hack, "'All we do is build': Community Building at Canterbury Shaker Village, 1792-1939," *Historical New Hampshire* 48 (Summer-Fall 1993), p. 115.

Trustees' Building clearly represents the Shakers' determination to build a structure of the highest quality, convenience, and comfort.

According to Greenwood's journal, the building was completely finished and occupied by the trustees in November, 1832. The total cost of the building was $7,440.00.[6]

The building was further remarkable in having a roof of Welsh slate, costing $400.00.[7] Although the community had originally planned to roof the building with tin-plated iron, the Shaker builders had apparently become persuaded, while building the structure, of the availability, greater longevity, and reduced maintenance cost of slate. Roofing slate was rare in New England in 1830, especially away from seaports where shipments might occasionally be landed. A limited quantity of slate was being quarried in areas of Vermont's Connecticut River Valley by 1830, but this would have been still more inaccessible to the Shakers than Welsh slates delivered at Portsmouth and transported to Canterbury. The fact that the Shakers bore the trouble and expense of obtaining this expensive yet long-lived roof covering attests to their determination to make their office building a model of permanent construction.

Just before completion of the building, Nathaniel Hawthorne, no stranger to large brick structures in his native town of Salem, Massachusetts, recorded his impressions of the new office. Traveling through Canterbury on a horse-trading trip with an uncle, Hawthorne described the Shakers as "immensely rich," noting that "they are now building a brick edifice for their public business, to cost seven or eight thousand dollars."[8]

As completed, the Trustees' Office stood as a dignified point of commercial contact between the Shakers and the World. Impressive in its size and the obvious quality of its materials and workmanship, the new office would at once have been both a symbol of the Shakers' prosperity and business acumen, and a testament to their belief in the religious dimension of building and handiwork. With its extensive basements providing larders, fuel, and water for its kitchen, the building supplied a dining room that must have rivaled those of the best taverns of the day. Upstairs, the building provided residential space for the trustees, who acted as the business agents of the village, and accommodations for guests. Apart from the meeting house, where services were opened to public view, the Trustees' Building offered the only place where strangers could observe and converse with the Shakers. From 1848, when a post office was established at the village to save a round trip of four miles for the mail, the building also served as the United States post office for East Canterbury.[9]

---

[6] Irving Greenwood, "Church Family Building Journal," Canterbury Shaker Village Archives, p. 90.
[7] Ibid., with information taken from Winkley Daybook, entries for April 26 and November 22, 1831, p. 77.
[8] Norman Holmes Pearson, "Hawthorne and the Mannings," *Essex Institute Historical Collections* (July 1858), p. 185, quoted in Swank and Hack, "'All we do is build,'" pp. 103-4, and Swank*, Shaker Life, Art, and Architecture*, p. 20.
[9] Irving Greenwood, "Church Family Building Journal," Canterbury Shaker Village Archives, pp. 90-91, gives the date of establishment of the Shakers' post office as 1861, with Robert Shepard as first postmaster. Other sources state that the post office was established in October, 1848.

Greenwood's journal provides a chronology of later changes, adaptations, and added amenities in the building:

1850 A hallway was built to connect the north and south stairhalls in the main basement.

A pantry was built in the main basement. "Both pantry floors [were] cemented," indicating that the building already had a pantry—perhaps the large room in the southwest corner of the sub-basement, now holding apple bins.

1851 Water was first introduced into the "trading room."

1864 A floor of black birch was laid in the trading room.

1880 The South Kitchen was added. This wooden addition extends from the center of the main basement wall, its floor level being a few steps below that of the main kitchen.

1886 or 1888 Three toilets were installed in the building.

1891 The three chimneys were rebuilt. Several photographs reveal that, even after this rebuilding, the southernmost chimney was visibly larger than the other two. Serving the original kitchen, this chimney would have vented a variety of cooking devices, possibly including elements of Rumford apparatus, already used elsewhere in the village.

1892 Toilets, bathroom, and marble sinks installed.

1897 South kitchen painted.

1901 South and middle chimneys "entirely rebuilt." At this date, the large southern kitchen chimney was probably reduced to its present dimensions, which nearly match those of the other two chimneys.

Hallway built between north and south stairhalls in the "middle loft" [second floor?]

Bathroom built in Brethren's Room.

1902 Lavatories with hot and cold water installed in "Reception Room #2," the Northeast Room, and the Middle Room. "[T]he two last are Guest Rooms on Middle Loft."

Canterbury and Boscawen telephone line installed.

1903 Roof re-slated. "Use most of old slate[;] buy enough to finish job. (See Family Record, p. 89)"

Old horse block removed, fence of stone posts and chains (visible in old photographs) removed, walks re-laid, new porches built.

Home [internal] telephone line installed.

1904 Oak entrance doors and new sidelights installed, along with new porches having screens of turned spindles and decorative brackets; two-over-one sashes installed throughout the building to replace the original twelve-over-twelve or twelve-over-eight sashes.

1905 One-story brick annex, 30' by 30,' added to the north end of the building for packing and storage rooms, using underpinning stones salvaged from demolished buildings that had stood at the Second and North Family villages.[10]

1909 Bathroom installed on the second story at the north side of the building.

Two toilets on the south side of the building replaced with "open plumbing." New lavatories installed.

Back porch built, with a bridge connecting the porch with a woodshed behind the Trustees' Building.

1910 Ice chest in cellar is rebuilt.

Direct current electricity installed in the building.

1911 Window frames varnished.

Wood room built in South Kitchen.

Wood box built in southwest corner of South Kitchen. "It takes the place of a large cupboard that was used for refuse. A small cupboard with slide doors [was] built on [the] west of the South Kitchen, out of doors, with a drop door inside for storage of refuse."

1913 Dumb waiter built between [main] kitchen and "Company's Dining-room."

Rebuild kitchen.

1914 "Put a steel ceiling and sideing [sic] in Company's Dining Room, Paint room with 3 shades of green during March 1914." This room retains its metal finish. Architect Penelope S. Watson noted in 1990 that "every inch of the room, except

[10] National Historic Landmark nomination (1993), page 7.

for the floor, is covered with manufactured pressed metal, of the type seen on the ceilings of many nineteenth century stores. Ceiling, cornice, walls, frieze, chair rail, dado, baseboard: all are expressed in different patterns of metal, painted different shades of green. It cannot be known whether it was inexperience or creativity which resulted in the cornice being applied inside out, and the chair rail, upside down, from the way they were intended. The room is well-proportioned and delightful, despite its departure from the traditional."[11]

Front porches rebuilt.

1916 Building equipped with National Lightning Arresters.

1920 South kitchen roof shingled with asphalt shingles.

1921 [Kitchen] range brought from Enfield.

1922 Driveway built from blacksmith shop (just to the south) to the South Kitchen.

1924 "Caloric" hot air heater installed. "Have to excavate a place for it under North West corner of building. Put in a cement floor and hatchway. First fire November 20th 1924."

"Put 2½ [inch] gal[vanized] pipe in cellar to improve service."

"New hot water boiler in Kitchen in July 1924."

"Put a 1½ in. Galvanized iron pipe from Cellar to Horse Barn (p. 340) in Sept. 1924."

New floors on front porches.

1926 Paint kitchen and Muresco walls throughout the building.

New toilet outfit in upper north bathroom.

1928 New china tank in south toilet, Middle Loft.
New bathtub and piping in upper south bathroom.

1930 New noiseless toilet in Brethren's bathroom.

Irving Greenwood's detailed chronology provides a far more complete history of changes to the Trustees' Building through 1930 than is usually available for any structure. Nevertheless, many unnoticed changes occurred to the building even during the period of

[11] Penelope S. Watson, "Architectural Survey and Analysis, Canterbury Shaker Village, Canterbury, New Hampshire" (draft), September 1990, pp. 38-39.

his chronicle, and further modernization has continued since 1930, when Greenwood's chronology ended.

Although Greenwood did not mention it, the electrical service of the building, like that of the remainder of the village, was converted from direct current to alternating current in 1925. In that year, the Shakers built an electric line to Loudon, connecting to the New Hampshire Power Company's service.

Brother Greenwood himself had installed the earlier direct current system in 1910, feeding each building from a still-extant generator house with a gasoline engine-driven dynamo and a battery of acid-filled glass storage cells. Because direct current systems were not compatible with most electric motors of the period, such systems were utilized almost solely for illumination. When the direct current system was largely supplanted in 1925 by alternating current from Loudon, the Shakers were free to use a multitude of motor-driven appliances, from electric fans to refrigerators, that had been denied them previously. Evidence in the generator house suggests that the village retained the direct current system in reserve for times of failure of the alternating current service.[12] Beginning in 1937, Canterbury Shaker Village resorted to a public utility for all its electric power, and the DC machinery was presumably removed from the generator house.[13]

Significance:

Technology: The Trustees' Building is significant as an example of masonry construction, built by the Shakers at a period when a number of other granite-and-brick structures were first being built by non-Shakers in neighboring communities. The structure therefore affords an opportunity for comparison between contemporary Shaker and non-Shaker masonry technologies, and suggests possible connections between the Shakers and the World. The building is also significant as one of the most fully-realized examples of federal-style architecture at Canterbury Shaker Village. As such, the structure permits an evaluation of the ways in which the then-prevalent (but rapidly fading) style of non-Shaker communities was adapted and simplified by the Shakers.

The Trustees' Building reveals important information about Shaker granite work and bricklaying. The stone foundations of the building are carefully constructed of regular courses of large granite blocks, uniform in height and fashioned with carefully finished bedding planes that permitted the blocks to be laid with narrow mortar joints. The exterior faces of the stones, where exposed to view above grade on the south wall (visible from the public highway), were hammered to a true plane.

The high south foundation wall of the Trustees' Building is superior in quality of finish, and size of blocks, to the walls of the New Hampshire State House of 1819 in nearby Concord. The finely-hammered finish of the foundation stones on the east and south, and

---

[12] David R. Starbuck, ed., *Canterbury Shaker Village: An Historical Survey, Volume 2* (University of New Hampshire, 1981), "Electrical System," pp. 108-112.
[13] Swank, *Shaker Life, Art, and Architecture*, pp. 222-223.

of the window lintels and sills, is equal in quality to the stonework of the contemporary (1831) Nathaniel G. Upham House on Park Street in Concord, which was cited in at least one building contract as the standard for finely-finished granite.[14] In keeping with practice in the World, the Shakers lavished less labor on the western foundation wall, which was not visible from a public vantagepoint. Here, the stones were left with a split quarry face.

Evidence on the exterior arrises of the stones at the rear (west) of the building shows that the Shakers split these blocks using lines of chiseled slots and flat iron wedges. This is confirmed by further evidence of splitting technology on areas of the roughly-split interior faces of the walls, seen in the basements. The method of splitting granite with chiseled slots was the first splitting technology employed in New England. The technique was introduced to the region in the late 1760s, though it did not become widespread until the late 1700s.[15]

The technique of splitting with chiseled slots and flat wedges was being supplanted in the most active quarrying regions of New England by 1830, when the Shakers laid the foundations of the Trustees' Building. The technique that replaced the older method entailed the use of a "plug" drill, which was rotated at every blow of the quarryman's hammer, creating a round hole in the stone. Into such holes were placed a set of splitting devices composed of two iron "feathers," whose rounded surfaces corresponded with the cylindrical hole in the stone, and a sturdy iron wedge, which exerted great outward pressure on the feathers. The combination of plug drill, feathers, and wedges permitted granite to be split in larger pieces and with greater control than had previously been possible. Introduction of the new technique corresponded with the opening of larger and deeper quarries in solid ledge than had been commonplace before. The new technique leaves distinctive semi-cylindrical holes, three or four inches deep, along the edges of the split blocks.

Visual evidence of the new technique is occasionally seen by the mid-1820s. Structures built by 1830 in towns near Canterbury often show a combination of the older and newer splitting methods.

Canterbury Shaker workmen were clearly masters of granite work by 1830. They were, in fact, fashioning granite objects, such as solid steps with two or three risers cut from a single block of stone, which were never attempted by neighboring granite workers. Although it is clear that Shaker granite cutters did not need the new splitting technology to achieve mastery over stone, it is uncharacteristic of Shakers not to adopt the newest and best techniques for performing any job. The fact that the Shakers were apparently using only the older splitting method in 1830 suggests that they were splitting their own granite without much contact with workmen in neighboring non-Shaker communities.

---

[14] National Register nomination, Nathaniel G. Upham House/Upham-Walker Property (1979).
[15] James L. Garvin, *A Building History of Northern New England* (Hanover, N.H.: University Press of New England, 2001), p. 44.

While the stonecutters among the Canterbury Shakers may not have been as technologically advanced as some of their fellow tradesmen in the World, Shaker brickmakers apparently led the region in the quality of their work. As noted above, the Church Family had established a brickyard at Lake Meadow in 1824. Since the Shakers probably had no intention of erecting a brick edifice at that time, much of their brick production must have been focused on material for the many chimneys in their wooden structures.

Evidence also suggests that the Shakers invested effort in producing a specialty product. The cellar floors of several of the surviving buildings at Canterbury, including the Trustees' Building, are paved with hundreds if not thousands of eight-inch-square clay tiles. Although the Canterbury Shakers used these tiles principally as pavers, the same products were universally employed as hearth tiles outside of a Shaker context. In ordinary non-Shaker dwellings, such tiles are laid in two or three parallel rows in the forehearths of fireplaces.

The fact that the Shakers used such tiles so lavishly in their cellars suggests that tile production was a specialty at the Lake Meadow brickyard. The Shakers were adopting airtight stoves during the period after the Lake Meadow brickyard was put into operation. Since stoves require no hearths, the Shakers may have been producing these tiles for sale to neighboring builders, who were still employing fireplaces to heat their buildings well into the 1830s. The average dwelling house would require only forty or fifty such tiles for its fireplaces. Such a quantity would not have weighed more than 250 or 300 pounds, so it would have been feasible for masons in the region to travel to Canterbury and transport needed quantities some distance in freight wagons.

The longevity of the tiles used on the damp and frosty floors of Church Family cellars proves that Shaker brickmakers were capable of firing a very hard and enduring product.

The walls of the Trustees' Building likewise prove that Shaker brickmakers had mastered the production of a superior quality of brick.

The bricks of the Trustees' Building are of the type termed "pressed" or, more accurately, "re-pressed" bricks. Unlike common bricks, re-pressed bricks were molded in a two-stage process. First, as in the production of all bricks, the clay was shaped in a wooden brick mold. Rather than being fired after this initial molding, re-pressed bricks were allowed to dry to a stiff consistency, and then were placed in a machine for final shaping. The re-pressing machine subjected the still-plastic rectangle of clay to great pressure in a metal mold or flask, transforming the rough product into a perfect prism. After further drying, re-pressed bricks were fired in a kiln in the ordinary way, emerging as a ceramic with a smooth surface, sharp edges or arrises, and a uniform size.

A variety of brick presses had been developed and patented by the early nineteenth century, and it is impossible to know without further documentation whether the Canterbury Shakers used a machine invented by others or one of their own devising. But a comparison of the bricks in the Trustees' Building with the few contemporary examples

of re-pressed bricks in neighboring towns reveals the special care that the Shakers exercised in making bricks of unusual perfection.

Although a few buildings built in Portsmouth after about 1815 incorporated re-pressed bricks (possibly brought to the seaport from Philadelphia or elsewhere), only two contemporary buildings constructed of re-pressed bricks have been identified thus far in the vicinity of Canterbury. These are the Bailey Parker House in North Pembroke (c. 1830), and the Nathaniel G. Upham House on Park Street in Concord (1831). Both structures are located within a radius of a dozen miles of the Trustees' Building. Like the Trustees' Building, both of these houses have walls laid in plumb or stretcher bond, with no headers. In all three buildings, the mortar joints are very narrow; the mortar in each case must have been made from lime and screened sand to create a creamy cement that could be spread thinly. Thus far, we have no documentation on the source of bricks for the Concord and Pembroke dwellings.

Although all three structures display similar bricks laid in the same bond, it is notable that the bricks in the Trustees' Building are smoother and more uniform in color than those of the other two buildings. The Shakers' bricks are a uniform dark red, showing hardly any "flash," or dark coloration from the firing process. By contrast, the re-pressed bricks in Concord and Pembroke, though carefully culled for uniformity, do reveal dark areas. To a greater degree than those in Canterbury, these bricks also show surface indentations from being stacked in the kiln while still plastic.

To judge from the other two contemporary examples, the Shakers were apparently manufacturing re-pressed bricks that were superior to those being made elsewhere in the upper Merrimack River valley. It is likely, too, that the Church Family culled the bricks for their Trustees' Building with special care, choosing only the specimens that were most uniform in dimensions, color, and smoothness. Given the Shakers' success in firing such perfect products, it is surprising that they apparently did not sell re-pressed bricks to masons who were working in their vicinity. The scarcity of buildings built of such bricks suggests that most people were unwilling to pay for the added cost of such fine materials and workmanship.

Style: In addition to its distinguished materials, the Trustees' Building is significant as a document of Shaker architectural style in the early 1830s.

The exterior of the building is deliberately devoid of stylistic vocabulary. Like other brick buildings of 1830, the structure employs a regular pattern of openings, trimmed by hammered granite lintels and sills. But unlike many other brick buildings of 1830, the Trustees' Building displays no such overt signs of the federal style as semi-elliptical arches above doorway openings. In its adherence to simple rectangular openings and granite lintels, the structure looks forward to the deliberate plainness of brick buildings that would be built in the Greek Revival style in neighboring communities a few years later.[16]

[16] One example of a simple brick house in the Greek Revival style is the Charles Graham (Bridges) House of 1835 in East Concord, now the New Hampshire governor's residence.

On the interior, however, the Trustees' Building is a rich document of the Shakers' adaptation of the federal style. The interior finish of the building also documents the refined but *retardataire* nature of Shaker joinery. While contemporary buildings in neighboring communities (including the Bailey Parker and Nathaniel Upham houses, discussed above) reflected the incoming Greek Revival in their interior finish, the Trustees' Building was the first in the village to reflect the federal style. If measured against the changing fashions in contemporary buildings of the World, the Trustees' Building would have been thirty years out of date. On the other hand, the Shakers' interpretation of the federal style had its own integrity and cannot be measured against the changing fashions of non-Shaker buildings.[17]

A basic hallmark of the American federal style was the adoption of the Grecian moulding profile. The Grecian moulding is based upon conic sections (ellipses, parabolas, or hyperbolas). Such moulding are usually seen throughout federal-style buildings, appearing in door and window casings, cornices, chair rails, mantelpieces, and as ornaments on the stiles and rails of doors. Federal-style doors are most often flat-paneled, at least on their principal face.

In their simplification of the federal style, the Shakers eschewed elaborate mouldings. Most often, their door casings were simple, flat boards with neither an inner bead nor an outer backband moulding. Where the Shakers did use mouldings, they adhered to the older, simpler Roman profiles, which used segments of circles rather than conic sections.

Shaker doors of the federal style, like the original doors of the Trustees' Building, bear a recognizable resemblance to standard federal-style doors. While the Shakers preferred four-panel doors to the six-panel doors that were more favored by the World, they duplicated the more basic hallmarks of the standard federal-style door. Among these hallmarks are the use of flat (rather than raised or fielded) panels, the use of delicate mouldings on the stiles and rails of the doors, surrounding the panels, and extreme thinness of door stock, resulting in doors that might be only 7/8 of an inch thick. In the case of the original Trustees' Building doors, the stiles and rails are decorated with a simple, delicate quarter-round moulding, set off by two fillets.

The survival of original doors and other joinery, in combination with original paint and stain treatments, provides an important benchmark of Shaker aesthetics. The Shakers made the Trustees' Building their first brick and granite structure, covering it with the first roof of slate seen in the village. The building was a symbol of Shaker quality and permanence, but it also heralded the advent of a new style of joinery in the village. Both

---

[17] The Shakers' slow change from the Georgian to the federal style in their joinery is discussed in Penelope S. Watson, "Architectural Survey and Analysis, Canterbury Shaker Village, Canterbury, New Hampshire" (draft), September 1990, pp. 13-15. Watson notes that "the transition from one [architectural style] to another tended to be much slower than in the outside world, but recognition of external style is almost always to be seen. . . . The first Canterbury building to move away from these [Georgian] elements was the 1831 Trustee's Building. The molding profiles appearing there are a simplified version of Federal moldings used elsewhere in the country, though once again these stylistic changes were not incorporated by the Shakers until they had gone out of style in the outside world."

in materials and finish, the Trustees' Building is a significant document of Shaker workmanship.

The Trustees' Building is also significant as a document of changing Shaker needs, styles, and technologies. As noted above in the chronology of changes recorded by Brother Irving Greenwood, the Trustees' Building continued to evolve over time, nearly to the present moment. The changes that are incorporated in the fabric of the structure are an important index of change in the Church Family. It will be important to identify, study, and record those changes carefully, using a combination of documentary and physical research, before alterations are carried out to the structure.

Preservation Priorities:

Masonry repairs: The most persistent problem of the Trustees' Building has been settlement of its northern foundations, especially the footings of the annex. The annex was added to the original building in 1905. Old photographs and evidence in the walls of the main building of 1830-32 make it clear that there was also some movement of the northern foundation wall of the original structure. This movement is revealed in the step cracking (now patched) that occurred around the northernmost windows of the front and rear elevations of the building. The fact that the Shakers were conscious of this movement is revealed by their installation of masonry anchor bolts, with diamond-shaped washers, at the levels of the second and attic floors of the north wall of the original building. No comparable anchors are seen in the south wall of the structure. Their absence suggests that the anchors on the north were added in an attempt to lock the wall and floor membranes more firmly together, perhaps when cracks began to appear between the floor boards and the baseboards in the northern rooms.

It should be noted that a relatively minor movement in a brick wall creates a highly visible set of cracks. The same amount of movement in a framed building would probably pass unnoticed. The actual amount of shifting around the north wall of the original building appears to have been small and structurally insignificant.

The movement that is visible in the northern and western (rear) walls of the 1905 annex, and to a lesser extent in the façade of the annex, is much greater. Here, horizontal and vertical movement has exceeded an inch in some places. Cracks that were patched some twenty years ago in an earlier rehabilitation have re-opened, or have been replaced by new cracks in areas that previously had not shifted or settled.

At some point, perhaps in the 1940s, workmen poured a buttressing concrete dike around the base of the annex and the north wall of the 1830-32 building to try to contain the motion of the brick walls.[18] This dike was built of unreinforced (mass) concrete, and rises to a height of about five feet around the lower brick walls of the annex and the end of the main building. The dike itself has cracked and settled in several places, and is

[18] The date of this concrete is approximate. The concrete was poured inside forms constructed of individual sawn boards. After World War II, plywood was used more frequently than boards for concrete forms.

currently providing no resistance to further separation of portions of the brick walls of the annex.

The fact that the annex shows greater subsidence than the main building is probably explained by the fact that, while both the annex and the northern portion of the main building share a similar soil geology, the annex was built upon relatively insubstantial foundations. As noted above, the main building was built on massive foundation walls of heavy granite blocks. This foundation probably has footings that extend well below the surface of the ground behind the Trustees' Building, possibly resting on a substratum of soil that has greater load-bearing capacity that the areas nearer the natural surface. The substantial construction of the main building has preserved it from major settlement, although, as noted above, the northern wall and the northerly section of the front and rear walls have settled to a slight degree.

By contrast with the main building, the annex was apparently built upon rather shallow footings of cemented stone rubble, topped with split granite underpinning that was salvaged from older buildings. There is no cellar beneath the annex, but only a shallow crawl space. Furthermore, the soil behind or to the west of the annex does not lie at its natural angle of repose. The area behind the annex has been excavated, and the face of the excavated bank is retained by a tall wall of large, dry-laid granite slabs. The staff at Canterbury Shaker Village understand that an underground drain may extend beneath the annex, perhaps discharging excess groundwater through a visible opening at the base of the dry-laid retaining wall.

Excavations in the year 2000 for construction of footings for the visitors' center, a short distance north of the Trustees' Building, showed the soil near the surface to be sandy. It may be assumed that the same surface soil conditions exist beneath the annex.

Thus, the annex stands on a site characterized by a combination of sandy soil, a retaining wall that is pervious to the migration of fines (small soil particles), a possibly active drain beneath the building, and shallow masonry footings. While it is not yet known how these conditions may have combined to affect the walls of the annex, it is clear that the 1905 building has long suffered from instability and settlement of its footings. These conditions need to be addressed and corrected for the future preservation of the structure.

Masonry contractor John Wastrom, a specialist in brick and stone structures, will be submitting a separate report making specific suggestions for the investigation and correction of these conditions.

Window sashes: As noted above in Irving Greenwood's chronology, the present sashes were installed in 1904. These sashes have been maintained over the years, but their continued preservation and thermal efficiency depend upon ongoing maintenance. The sashes should be re-puttied and repainted on a regular basis, as part of a plan for the cyclical maintenance of the portions of the building that are exposed to the weather.

Most of the 1904 sashes that light heated rooms have been covered by triple-track aluminum storm window units. Although not aesthetically attractive, these units provide good thermal efficiency and a good degree of preservation for the older wooden sashes.

Slate roof: As noted above in Irving Greenwood's chronology, the Trustees' Building was re-roofed in 1903. The roofers salvaged and reused as much as possible of the original Welsh slate, which had been installed in 1831. Where original slates had become damaged, the Shakers purchased enough new material to replace them. Thus, the present roof has slates of at least two different origins and two different dates of quarrying.

Since the original Welsh slates needed re-laying after seventy years, and since the slates of 1903 have been on the roof for nearly one hundred years, it would be prudent to have an expert roofer carry out a careful assessment of the condition and needs of the roof. It would be particularly important to know whether the re-slating of 1903 was done with steel or copper nails. The failure of the 1831 roof after seventy years may have been caused by the rusting of the iron nails that presumably were used in the initial installation, rather than by the failure of significant numbers of individual slates. If the roofing work of 1903 was done with copper fastenings, it may still have considerable service life.

It is clear that other roofing work has been done in more recent years. Standing-seam copper ice belts were added at the front and rear eaves at some time before National Register photographs were taken in 1974. The condition of the sheet copper should be checked. A search should be made for any original slates that may have been saved and stored when the lower courses of slate were replaced by copper. Such slates would be invaluable in future roof repairs.

Electrical system: The Trustees' Building presently has a 200 ampere service, distributed partly through old wiring and partly through newer wiring installed at various periods down to recent times. As noted above, the greater part of the wiring in the Trustees' Building was installed in 1910 for direct current lighting. The wiring of the structure has been changed and upgraded over the years for evolving conditions, including the adoption of alternating current in 1925. Increased expectations have made the building a virtual museum of the evolution of electrical technology through the twentieth century.

It has been assumed that the original direct current system installed in the Church Family village by Irving Greenwood in 1910 was a 110-volt system.[19] If so, the gauge of wiring installed for direct current distribution would be the same that was required by the electrical codes of the period for alternating current.

If, on the other hand, the original direct current system was the then-equally-common 32-volt technology, the lower voltage would require greater amperage, with wires of larger gauge to carry this amperage and achieve the same wattage in the system. If wires of larger gauge were used, the building would have been rated as over-wired when the

[19] David R. Starbuck, ed., *Canterbury Shaker Village: An Historical Survey, Volume 2* (University of New Hampshire, 1981), "Electrical System," pp. 108-112.

system was changed in 1925 to alternating current supplied by the New Hampshire Power Company. Thus, we can conclude that for simple electrical uses, the Trustees' Building would have been wired safely in 1910, and that its safety would not have been compromised, and might even have been improved, by the switch to alternating current fifteen years later.[20]

On the other hand, the electrical system of the Trustees' Building has apparently never been assessed professionally. It has been altered and augmented over the years as new and increasing demands for electrical service have arisen. A brief inspection of the building in 1998 by Donald P. Bliss, New Hampshire State Fire Marshal, elicited the statement that the Trustees' Building could have serious electrical safety hazards and needs careful assessment and attention. This would be particularly true if the building were to be adapted for a more intensive residential use than it has thus far served.

Thus, a further recommendation of this report is that the entire electrical system of the Trustees' Building be professionally assessed. If the existing system is augmented or supplanted, the new work should be designed and executed in keeping with the *Secretary of the Interior's Standards for Rehabilitation*. Even if deactivated, the old system should be left in place and preserved as an important part of the technological history of the Village.

Plumbing: The Trustees' Building has had an interesting history of water distribution since its completion in 1832. At that time, a cistern was built in the sub-basement to supply the kitchen above with water, undoubtedly with the use of a pump. As Irving Greenwood's chronology reveals, water was made accessible to the "trading room" in 1851. The first water closets were apparently installed in 1886 or 1888. Other indoor plumbing followed in 1892, 1901, 1902, 1909, 1926, 1930, and undoubtedly later. The kitchens were also upgraded from time to time, and an improved water line was installed to the building in 1924. Like all other buildings supplied with water, the Trustees' Building would have received water under increased pressure after the pump mill and the high service water tower were installed in 1905.

An evolution of this complexity would have left the Trustees' Building with a highly diverse system of supply and waste piping. Current staff attest to the fact that the building includes a combination of brass and galvanized iron piping, as well as more modern soldered copper piping.

Typically, a mixed plumbing system like this develops leaks and loss of pressure in a number of areas. Such a system becomes very sensitive, and any attempt to repair or replace portions of the supply piping tends to create leaks in nearby areas. As with any kind of water infiltration in a building, plumbing leaks can be highly destructive if allowed to persist over time.

---

[20] "Isolated Plants," in Herbert P. Richter, *Practical Electricity and House Wiring* (Chicago: Frederick J. Drake & Company, 1944), pp. 177-180.

For this reason, this report recommends a full evaluation and mapping of the plumbing system in the Trustees' Building. As does the electrical service, the plumbing system of the building holds great research value in our understanding of the evolving technologies adopted by the Shakers. As with the electrical system, this report recommends that a careful study precede any but emergency repairs, and that policies be developed to preserve in place those sections of older piping that may be supplanted by new work in the future.

Security and fire suppression: The Trustees' Building is partially protected by smoke detectors. For the safety of the building and its future occupants, a close study should be made of the installation of a more comprehensive fire detection system and a sprinkler system.

Canterbury Shaker Village has pioneered in the installation of unobtrusive sprinkler heads. The Village has the opportunity to continue its leadership in this field. In the year 2001, Factory Mutual approved high-pressure mist fire suppression systems for certain applications in the United States. This approval gives the Village an opportunity to explore an entirely new range of fire suppression techniques.

If thoughtfully designed, a mist fire suppression system may have less impact on historical building fabric than ordinary exposed or concealed sprinkler systems and thus may be more in keeping with the *Secretary of the Interior's Standards*. In action, a mist system has the advantage of greatly reducing water damage to a building and its contents.

Initial discussions about enhanced fire protection for the Trustees' Building commenced in 1998 between Canterbury Shaker Village, the office of the State Fire Marshal, and the New Hampshire Division of Historical Resources. The present report urges a continuation of these discussions, with a full evaluation of the latest available technologies and approaches, a thorough consideration for enhancing the fire and life safety of the Trustees' Building, and a careful evaluation of every proposal against the *Secretary's Standards.*